

5 F 523
F 828

MANUAL
ON THE
MANAGEMENT
OF
B B B S.

Busti, N. Y.

1848.



any Notes

MANUAL

ON THE

MANAGEMENT OF BEES;

GIVING A

DESCRIPTION OF THE BEE, ITS

DISPOSITION AND HABITS,

AND

DESIGNED TO DESCRIBE AND ACCOMPANY

THE SELF-PROTECTING BEE HIVE;

Illustrated.

BY ABRAM FRANK,

OF BUSTI, N. Y.

1848.

@ SF 523
F828

@ 114,595

INTRODUCTION.

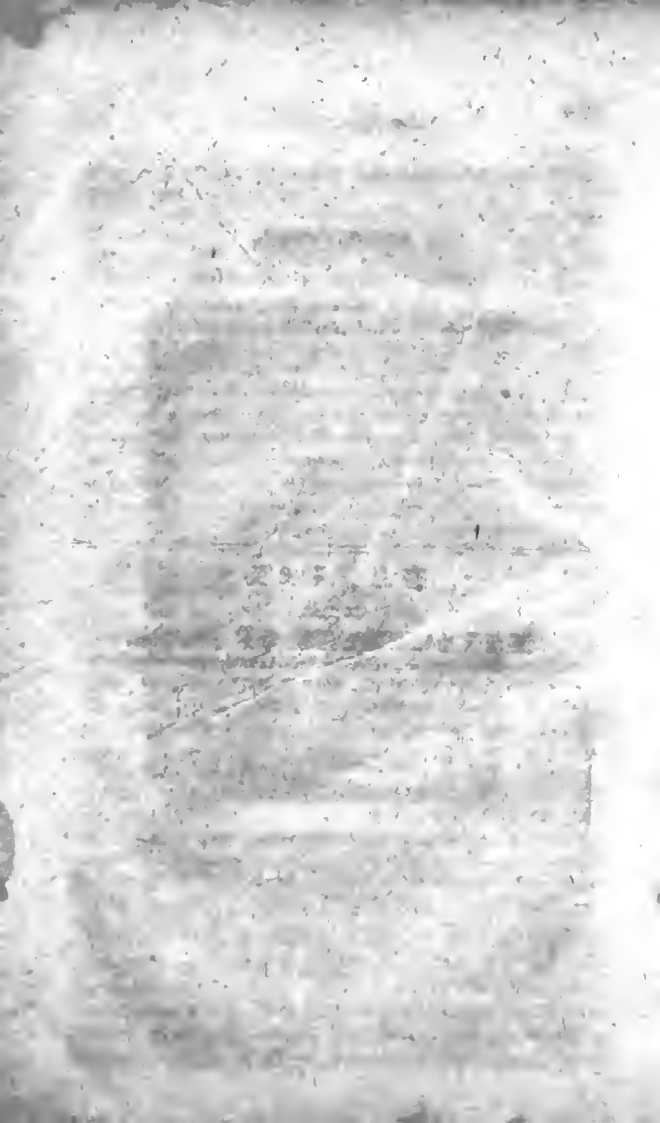
It is always usual for an author to give the public his reasons for introducing a new work to their attention, by way of preface, and inform them what he designs to do in his book. Following the usual custom, though the preface to a book is scarcely ever read by the mass of readers, the Author desires to say that a new Bee Hive patented in August, 1848, and receiving the first premium at the Fair of the *New-York State Agricultural Society*, in September of the same year; combining all the advantages of most of the Hives now in use) was introduced to his notice for the purpose of testing its practical value, about two years since by the patentee, Mr O. STODDARD of Busti, New-York. The Author had devoted much time and attention to the management of Honey Bees, making from time to time, a variety of experiments, in order to secure the greatest advantages from them, in multiplying laborers, and securing the results of their labor. He has used six different kinds of Hives, and feels confident that a good Apiarian can secure the most profitable results, and double his money expended in Bees, with a good Hive. That Hive which combines the most advantages, is the most profitable to the Apiarian, for all who have any experience must acknowledge that much depends upon the Hive, in managing Bees. The Author believing the above Hive to be the best in use—styled the SELF-PROTECTING HIVE—writes the following work to describe it, to commend it to the public who are interested, and also to afford a concise and useful manual on the management of Bees.

He cheerfully commends the above Hive to the confidence of those who may be engaged in the management of Bees, and to all who wish to engage in the business, as being just what it claims to be. Much credit is due to Mr STODDARD, the patentee, for bringing so useful a hive to the notice of the Public.

THE AUTHOR.

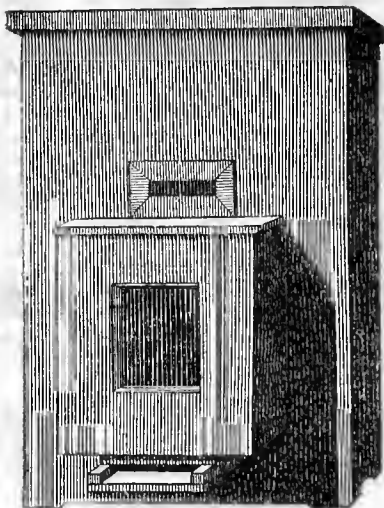
Buſti, November, 1848.

MANUAL
ON THE
MANAGEMENT OF BEES.



RULE FIRST.

Construction of a Bee Hive.



Front view of Self-Protecting Bee Hive.

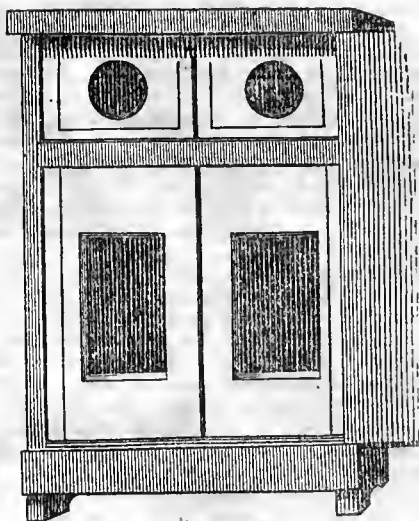
A Bee Hive should be made of good lumber, and in a workman-like manner, and painted white. It should be made smooth on the inside, and the head of each Hive should be scratched, so as to make it convenient for the Bees to cling to the top Board, while commencing their work in a new Hive. If it is not made rough by scratching, it will be very difficult for them to adhere to the Hive; and they frequently fall to the bottom board; and when this falling of Bees is repeated

for a few times, they will leave the hive, and seek a habitation in the woods.

I will now give the reader a description of the best Hive in use. After using several different kinds, and after ten years' study and experience, I have come into possession of a Hive that possesses most of the advantages of all others now in use.

First; I make the Casement 28 inches high, and 18 inches from front to rear, and also 18 inches from side to side. The Casement should be made of inch Boards, excepting the top, which should be 1 1/4 inches thick. The top should project over the casement 1/2 inch all around, except on the back side, where it should project 1 1/2 inches, in order to receive a groove for the sliding door. I put the bottom board two inches from the bottom of the Hive, to give room to form short legs, as you see in the following engraving. The bottom should be made of 2 inch plank, the top of which should be 4 inches from the bottom of the legs. I leave a space between the bottom plank and chamber floor, of 16 inches, to receive the two Hives which are occupied by the Bees and their winter store. The chamber floor is 3/4 of an inch thick, leaving the Chambers 6 inches. This Chamber is to receive two small long drawers. The Chamber floor and bottom plank are grooved into the sides of the casement. The front board and sliding door behind, should be each 1 inch thick, leaving the sides 16 inches wide. The Chamber floor and bottom plank should be the same width of the side boards. There should be a strip, grooved the same as the top board, and nailed on to the edge of the bottom plank, on the back side, to receive the lower end of the sliding door. I then make a tenon on each end of this sliding door, to fit the grooves. This should be done with much care to prevent insects from entering the casement. Here you have a back view of the Self-Protecting Bee Hive, with the sliding door moved to the right hand side of the Hive.

N. B. Instead of a Groove in the bottom board it should be beveled so that the door may slide up, instead of sliding in, and then put two small buttons to hold it tight.



In the front view of the Hive, you will see a ventilator, covered with fine wire gauze, or perforated tin. The ventilator is 1 inch wide, and 5 inches long, cut through the front board 1 inch below the bottom of the chamber floor, to let the breath and bad air escape from the Hive. I cut the gauze larger than the mortice through the front board, and tack it or perforated tin over the mortice. Then I mitre a strip 3-8 of an inch thick, and 3-4 of an inch wide around the mortice, over the gauze, taking care that my mitre and mortice shall be exactly of a size. This gauze should be made of fine wire—such as is used for milk strainers—or perforated tin, with the holes so fine that no insect can enter them, and pass into the casement.

The tube (which is the only entrance) should be put in front, near the bottom of the Hive. The top of the tube must be even with the top of the bottom plank.—

This tube should be 6 inches long, on the top, 6 inches wide, and 1 1-2 inches thick. The bottom should project 1 1-2 inches beyond the top and sides, to make a convenient place for the Bees to alight. The space in the tube is 1-2 inch high, and 5 inches wide. The tube should pass through the front of the Hive, and 1 inch into the bottom plank, to prevent the Bees from entering between the casement and the inner Hive. A mortice should be made in the top of the tube, half way from the front of the Hive to the front of the tube, 1 inch wide by 5 inches long, to receive the tube of the robber Box.

There is a tongue in the tube 1-2 inch thick, and 1 inch wide at the inner end, and comes to an edge at the outer end, which must be even with the mortice in the top of the tube. This tongue must be fastened at the wide end with a wire or screw, so as to turn it to the right or left, as occasion may require. The tongue must be in the centre of the tube, there being 2 inches space on each side, for the Bees to enter the Hive. I then make two grooves in the bottom plank, corresponding with the entrance ways in the tube. These grooves are 2 inches wide and 1 inch deep at the end of the tube, running to an edge in the centre of the Hive. There is a strip left between the grooves on the bottom plank which is not cut out, that the inner edge of each inner hive stands on.

The Robber Box should be made 14 inches high, 10 inches wide, and 6 thick, with a glass in front 8 inches by 10; and a hole in the back side 1 inch in diameter, to let the robbers into a box, if occasion should require. This hole should be covered by a piece of tin fastened at one end by a screw; so that it can be made tight to prevent the robbers escaping, or opened at pleasure.

A tube that just fills the mortice in the top of the Hive tube, should be fitted into the bottom of the box, passing half way through the box, to prevent the robbers from making their escape, by the same way that they entered. The back part of this tube should be made long enough to close the entrance to the Hive.—

This keeps the robbers out, and your own bees in, while you are catching the robbers. The front side of this tube should be 1-2 inch shorter than the back side, to give the robbers free access to the box. The hole at the lower end of this tube should be as large as possible, and taper to a half inch hole at the upper end. The robbers can then readily pass up this tube into the box, but not one in a hundred will ever return by the same way. In this way you can effectually prevent the depredations of robbers.

The two inner hives, to contain the bees and their winter stock, in the lower part of the casement, should be made of half inch boards, well seasoned, 16 inches high, 15 1-4 inches wide from front to rear, and 7 5-8 inches thick. There should be several holes through the inner side of each inner hive, meeting each other, so that the Bees can freely pass from one to the other; and also four holes through the top of each inner hive, corresponding with holes through the chamber floor, and honey boxes in the chamber, to give the bees an entrance into the honey boxes.

Make a hole 1 1-4 inches in diameter through the front side of each inner hive, to correspond with the ventilator in front of the casement, and cover them with coarse wire gauze, or perforated tin, to prevent the bees from passing between the inner hives and the casement.

If hives are made according to the rules here given, a space will be left all around the inner hives. This will prevent the comb from being melted by the hot weather, which is very important.

Make the Honey drawers so that two of them will just fill the chamber of the casement; and see that the apertures in the bottom of each drawer correspond with those in the chamber floor, and in the upper sides of the inner hives.

Put a glass in the back side of each inner hive, and each drawer, as you see in the engraving giving a back view of the Hive. By using glass in the hives and drawers, you will be enabled to see the skill and workmanship of your bees, and also to ascertain when your

drawers are full. The drawers should always be removed as soon as they are full, and empty ones put in their places.

By using glass in your Hives, you can learn the nature and disposition of the Bee, which is interesting to every Apiarian. You will also be able to tell when the miller is making depredations in the hive, if it ever should effect an entrance. In such cases, unless you discover much brood comb in the hive, the inner hive containing the moth, should be immediately removed; or in the other case as soon as the brood is hatched, and the place supplied by an empty hive. But with the self-protecting hive, but little danger need be apprehended from these destructive insects.

RULE SECOND.

On Swarming and Hiving.

A good Apiarian or Bee owner will have his Hives made by a good mechanic, of good material, painted white, and honey drawers in the chambers of each Hive. He will have the Hives in their places in the Apiary, and all things in readiness by the first of May.

As soon as a swarm comes forth and commences gathering on a limb, or in any other spot where they may choose to light, the Apiarian should immediately bring forth his Hive, open it, and with a wing or brush, cleanse it well from cobwebs and dust; and if he chose, rub the inside with Brine, Bee-balm, or Spirits. But this I consider useless. If your Hive is cool and clean, it is sufficient. He should place a clean board on the ground where he intends to live his Bees, and set the Hive upon it, and place under the hive three or four small blocks, so as to give the bees rapid ingress and egress, cut off the limb or whatever they may light on, (with care to prevent their dropping from the limb,) shake them gently on the board, and if they appear reluctant to take possession of this new and strange habitation, brush them under the Hive with a goose or turkey quill, and they will

soon enter. Should it be necessary to invert the Hive, (which is sometimes the case,) then see that your drawers are secured to the floor of the chamber, (which may be done by inserting a stick above the drawers,) invert the Hive, shake the bees into it gently, and then restore it to its upright position, on the board or table. As soon as the bees take possession of the Hive, they should be removed to the Apiary or place where you intend to have them remain through the season. If they remain for any length of time where they are hived, they commence their work, and in their first adventure, make very careful and accurate observations, survey their location, and if removed after this, many of the most ambitious and industrious bees of the colony may be lost. But Bees should never be allowed to light on a tree. The Hiver should always be used, as you will see in another rule.

REMARKS.

BEES swarm from 7 o'clock in the morning, to 4 o'clock in the afternoon, on a fair day, and on a cloudy day, they seldom swarm before 1 o'clock, and perhaps not at all, unless arrangements were made the previous day. When this is the case, they sally forth, unless the wind be strong and cold. I once had a swarm come forth in a rain storm, and I had the curiosity to know the cause of their adventure, on such an unfavorable occasion. I put them back into the Hive from which they had come forth; and they came forth again by 7 o'clock the next morning. By close examination, I found 6 young Queens of the same age. This was no doubt the cause of their coming forth on a wet day.— It was the third swarm from the Hive, and I lost the colony by experimenting.

Only two reasons can be given for the swarming of the Honey Bee. The first is, the want of room for the Bees to work; and the Queen to lay her eggs; and the second is, to avoid the conflict of the Queens, which will always occur, if more than one Queen is in possession of the Hive at the same time. Some authors inform us that swarms have been known to come forth,

before the Hive was full, but during more than nine years' observation, I have never seen an instance of the kind, and I am led to believe that it is contrary to the nature of the Bee.

The old Queen always goes out with the new colony, and leaves the old colony, retaining the Hive destitute of one. But it appears that they have a knowledge of their wants, and the capacity and most commonly the means of supplying them. They remove the Larva or Grub of the common working Bee to royal cells; and feed them on royal jelly, which produces female or Queen Bees. This may seem incredible to some, but it is a well attested fact, that as soon as they discover that their Queen has forsaken them, they set themselves to work to fill the vacancy, by constructing several royal cells into which they remove the grubs which would have been workers, and by feeding them on what is called royal jelly, they soon come out perfect Queens. These grubs may be removed to the royal cells at different stages, and by receiving this food, (which others do not receive,) they come forth different persons from what was intended, when the Queen (the only female in a colony of from 15 to 30,000) deposited her eggs in the dry comb.

One of the best Apiarians of the age, J. M. WEEKS, remarks that "the eggs are commonly laid in litters, about three times a week, during the breeding season; and the Bees to be more sure of succeeding in their experiments, divide themselves into squadrons, and undertake to make more than one, by taking them from different litters, and thus avoid the confusion of having a number of Queens hatched at the same time. This accounts for having more than one Queen at the same time. Two Queens cannot exist together long in the same hive. Nature has implanted an implacable hatred between them, and as soon as the notes of the first hatched Queen are heard, they are answered in tones of defiance by the nymph Queen younger, which is yet in her cell, and has not seen the light; and if not prevented by the workers, she is torn from her cell by her elder sister, and immolated to her love of

indisputable sway." But if the young Queen is sufficiently guarded to prevent that immolation, the elder sister soon collects her followers, and seeks a new habitation, and leaves the old one to be controlled by the young Queen. These Queens never return to their native home, and the Bees following her, loose all attachment to those remaining in the Hive from whence they came, as soon as they enter their new domicile, and commence laying up their winter store. It seems strange to a person unaccustomed to rearing and managing Bees, yet it is nevertheless true, that Bees, after working for months in a hive, may come forth with a swarm, be hived, and placed on a bench within ten feet of their old home, and after working a week in their new habitation, remove it; and all the bees out in the field of labor, on their return will fly around, and linger about the place, and such is their distinct nationality, that they soon give up and die in despair, and not one finds his way back to his old home and friends. This shows the necessity of placing your hive where you intend to have it remain through the season. You can remove your Bees into any part of your yard, if you do it before warm weather sets in—say in March or April. I would recommend to all Bee Cultivators, this method of managing stands of Bees: Change their position every spring, before the working season commences, and good will result from it. All good Farmers know that it is beneficial to change stock, from place to place. It seems to inspire them with new life and ambition.

Second swarms will generally make their appearance within ten or fifteen days after the first swarm. If they do not come out within nineteen days, you need not expect them through the season. The probability is, that the Queen has disposed of all the younger queens, and being invested with full government, remains contented.

It is impossible to give any rule by which to determine the exact time of the first swarming. In the old fashioned Box Hive, you can calculate near the time, by the quantity of Bees hanging on the outside of the

Hive. After Bees hang out in a cluster for a number of days, and all things are in readiness, they frequently enter the Hive again, to fill themselves with honey; for as a general thing, swarms go loaded from the Hive, though it is not always the case. Many burden bearers, on their return to the Hive, finding their companions gone, go in pursuit of them; and if they are near by, fall in with them and return not again. This, I am convinced by several years' observation, is a fact. The emigrants carry with them honey-bread and materials for gluing up the inside of the Hive, to exclude the light and cool air. In my opinion, the working bee has constantly on hand, a greater or less supply of wax, through the wax making season. It is made of small flakes, resembling minute particles of bran, which they remove from the scales on the belly. I have frequently seen them picking them out and placing them on the unfinished part of their work. This may be fully ascertained by any observing Apiarian, especially if he uses STODDARD'S Self-protecting Hive. In the evening, which is an appropriate time for observing their handy work, you can slip back the sliding door, and as the back of the Hives are glass, you can observe much of the nature and habits of the bee, with a candle light.

The days of second and third swarming, may be generally predicted as follows: The Apiarian passes through his stands of Bees in the evening, listening near the entrance of the Hives attentively; and if a swarm is about to come forth, he will hear the Queen giving an alarm at short intervals, which will be kept up till the swarm comes forth, or one Queen is destroyed by the other. He will generally hear two Queens at the same time, in defiance of each other; one (in her cell) making much less noise than the other. The noise can be readily discovered, being different from any other noise made in the Hives, and sounding much like that of the mud wasp. Sometimes the weather is unfavorable for swarming for a number of days, and this generally results in the death of all of the Queens but one. The knowledge of the existence

of another Queen in the same Hive inspires them with the greatest rage, and a general issue takes place between the royal bloods. If the eldest cannot succeed in pouring out her vengeance, and satisfying her thirst for blood, in wilful murder, she will sally forth with as many as see fit to join their destinies with hers, leaving the government of the Hive to the infant Queen.

It is often the case with the old box Hive, that a number of quarts of workers hang in a cluster on the outside of the Hive for several days, waiting patiently for their leader to give the alarm. When this takes place, all the Bees on the outside of the Hive, are in perfect confusion for a few moments, and soon leave the old Hive and engage with the new colony. It is not the case, as some suppose, that the older Bees all sally forth, and leave the younger ones to finish the work. Both the elder and younger swarm forth at the same time. I have frequently seen Bees engage in this grand rally so young that they would soon become fatigued, and fall down on the ground or surrounding objects sometime before the swarm made choice of a place to light. The younger Bees may be readily distinguished from the others, by their appearance. When the Bees come forth from the cells they are lighter colored than they are when older; and they do not fold their wings in the same manner as when they have been freed from the cells for twenty-four hours.

As young Bees engage in the regular labors of the Hive within a very few hours after they are hatched, every Apiarian should avail himself of a Hive that will prevent the great loss of time in the best part of the honey season, occasioned by their hanging out in clusters for days and weeks, entirely idle. I have found great advantage in using WEEK'S Vermont Hive, in this respect; but I think STODDARD'S Self-Protecting Hive far superior to any other now in use. In these Hives you can keep all your Bees at work, until the moment of swarming; and by so doing, you will have from ten to fifteen pounds of honey ready for market, in the small drawers, while the old box Hive is giving

you no profits, except the young swarms. Any Apiarian in possession of the Self-Protecting Hive, containing healthy swarms of Bees, can with due attention secure greater profits in the capital invested, than with money drawing 50 per cent. interest. People often object to Patent Hives, on account of the expense, but this is all folly. A good Hive may be made for \$1 50, and your profits above the Box Hive in a good season will be from \$3 00 to \$5 00. Besides this, your Hives well painted, and kept from the weather, will last an age, and are really more valuable if well cleaned after being once occupied by Bees, than when entirely new. Much labor in gluing up the cracks and crevices in the Hive, is already accomplished, and they can adhere to the chambers with more ease than when entirely new. Bees sometimes forsake the new hive in consequence of being unable to adhere to the chamber readily and commence their work. They soon become disheartened, and seek a new habitation. This is one cause of a swarm leaving a hive, from one to three days after they are hived.

The second is for the want of room in the Hive.—The third is more carelessness in the Apiarian. The Hive is placed where the sun beats directly upon it, and their domicile becomes so extremely hot, that they must leave it or suffocate. It is very essential that they be kept from the hot sun. In hiving Bees, you should cover the Hive with a bush or board as soon as the Bees enter it, that their house may stand in the shade.

Bees are sometimes irritable in swarming, and one reason is, the air is forbidding to them, by being cold, extremely hot, damp, windy, or otherwise, so as to impede their determined emigration. Another reason is, that they sometimes hang out in clusters for many days, not being apprized of the intention of the Queen, and finally come forth in confusion, without having an opportunity to fill their sacks with honey. In all such cases, the Apiarian should be provided with a veil to cover his face, and wollen gloves. These should be in the Apiary, ready for use at any moment. Quick

and harsh movements on such occasions are very offensive to them. They are easily enraged by striking or blowing them, and they will be very sure to show becoming resentment. They should be treated with great respect always, but especially on such occasions.

I suppose that not one swarm out of a hundred know where they are going when they sally forth from their Hives; and for this reason they should be hived as soon as they gather in a cluster, to prevent their sending off an embassy to seek a tenement. If this is done, they will never fly to the woods, admitting they have sufficient room, and the Hive is free from every thing offensive to them.

Bees sometimes go directly to the woods when they sally forth from the Hive. This seldom occurs, and when it does, it arises from one of the two following causes:

First: A colony may be ready to come forth, and be detained several days in the Hive by unfavorable weather; or they may come out and be driven back by wind or rain. At length the Queen sends off an embassy, and the first favorable opportunity they come forth, and follow the guides, who have already been thither, to some hollow tree in the forest, and take possession of it as their future home. Some have supposed that the Queen takes the lead in this journey, but this is a mistake. She remains at home until she comes forth with all her adhering subjects about her. It is an old whim that you must rattle bells and blow horns to prevent their hearing the calls of the Queen. This only serves to drive them away. There are many superstitious notions, such as a man must not sell his bees, because he will sell his luck. A man might as well say it would be selling his good luck to sell his sheep or cattle.

Second: Sometimes swarms come forth and fly about for some time, contending with a heavy wind, and at length settle on an adjoining Hive that are about sending forth a colony. This causes great confusion throughout the Hive, and sometimes they will come off

and flee to the woods. This unpleasant scene may be prevented, as you will see, by another rule, and I think it worthy of the attention of the Apiarian, as he can save those swarms in this way which would otherwise be lost.

My rule is, as soon as I see the Bees sally forth, to prepare my Hiver, and when I discover where they are going to light, I place my Hiver directly over the first small cluster that gathers, and as soon as a pint or more of Bees have collected in the Hiver, I move it from 4 to 20 feet from the place where they first commenced lighting, and fasten it in the air by setting a croch under the pole of the Hiver. By the time I have prepared my Hive and placed it on a board, the Bees have collected in the Hiver. I then take down the Hiver carefully, and shake the Bees on to the board, and with a quill brush them gently, to hasten them into the Hive. As soon as they are fairly in the Hive, I remove them to the place which I intend them to occupy during the season. If the swarm is very large, I let them into the drawers immediately, to prevent their leaving the Hive, and to give the whole colony an opportunity to commence labor at the same time. The Bees then commence rearing their comb first in the largest part of the Hive, and there they deposit a portion of bread and honey; the Queen commences the task of depositing her eggs to rear up a large family to supply her wants, and lay up a store for the approaching Winter. The chamber being supplied with the small drawers, the Bees will then divide off into companies, and a portion of the colony will occupy each small drawer, while the greater part continue in the body of the Hive. Here you discover the advantage of the Vermont and the Self-Protecting Hives. You are collecting honey in the drawers ready for market, and the most of the Bees are engaged in filling up the body of the Hives for their Winter's store.

Small swarms should not be admitted to the drawers under 10 or 15 days after hiving, to prevent their commencing work in the drawers before they do in

the Hive. If they commence work first in the drawers, the Queen will commence laying her eggs there. The workers will deposit more or less bread at the same time, and your drawer honey will not be fit for use.

Swarming commences about the 10th or 15th of June, and continues from 18 to 25 days in this climate, (Western New-York.) It depends some, however, upon the season, and they seem to possess a peculiar instinct which teaches them when the season is so far advanced that they cannot form new colonics with safety.— They soon commence a slaughter among the drones, and they will not permit any of the Queens to leave the Hive, but suffocate all but one that may chance to be in the Hive by piling themselves on to them in large piles, and then draw them out of the Hive, to prevent swarming.

RULE THIRD.

On Equalizing Colonies.

If you use the *Vermont* or *Self-Protecting Hive*, prepare your Hive as directed in Rule Second. Now hive your small colony in the body of the Hive, and place the Hive in your Apiary. Collect another small swarm in one of your drawers, and in the evening after swarming, insert the drawer in the Hive, and let the Bees have access to the body of the Hive, and in the morning, having disposed of one of their Queens, they will then be one colony. If you find your colony yet too small, introduce the 3d, and even the 4th, swarm, as above directed. If you use the *Hiver* you will avoid all this trouble.

REMARKS.

It is of the greatest importance to every Apiarian to keep colonics nearly of a size. Small swarms return very little profits to the owner as a general thing. They are obliged to work under great disadvantage.—

The Hive being large and the colony small, they cannot keep up animal heat enough to make their wax work to good advantage. Bees cannot make comb in a cold Hive. In such case, most of the workers must remain to keep a heat sufficient for the wax workers ; and consequently very few Bees can be spared to resort to the fields to obtain honey and bread. They will remain in this forlorn condition for a short time, and then abandon their work and their desolate home. It is hard to trace the footsteps of these little disheartened families. I suppose that they sometimes emigrate to unknown parts at a distance, but they are more generally overcome by their neighbors, and they generally carry off what remains of their work that is moveable ; and the owner looks for his little laborers, and finds himself disappointed. They have fled, and left their comb which they had constructed, to feed and increase their greatest enemy, *the moth*.

Second swarms are generally about half as large as the first swarms. The third and fourth decrease in the same ratio. The Apiarian should make additions to his second and third swarms, till they are about as large as a good first swarm. In this way, late swarms will be profitable ; but if suffered to remain single handed, they become discouraged for want of numbers, and cannot at the same time, carry on their work, and guard the Hive, to prevent their being robbed of what little they have laid up in store.

Small Hives should not be prepared for second and third swarms. Every Hive should be of the same size. Any drawer can be made in this case, and fit the chamber of the Hive. Let the Apiarian use every means to hasten their labors, and the Bees will do all in their power to enrich your tables with a luxury, and your pockets with a few *Dimes*. Very much depends upon the construction of the Hives. If you wish to reap bountifully from their labors, supply yourself with the best Hive in use ; but if you wish to keep Bees, merely for the sake of keeping them, an old box hive, gun, or barrel, will answer.

Swarms may be doubled any time within three days,

with perfect safety. After this they become more hostile. It is then unsafe for neighboring Bees to call at their door, for they may be seized and dragged away.

Bees are provided with a sack, in which to carry their provisions. They leave the old Hive supplied with several days' provisions, and they are compelled to build comb before they can empty themselves. In this condition, they are not easily vexed. I have doubled swarms at ten days' interval between swarming, with perfect success.

I would recommend doubling second swarms, and sending third and fourth swarms back into the old Hive from whence they came. This may be done by shaking the Bees on to a board near the mouth of the Hive, and brushing them with a quill toward it. You will be apt to see the queen, making her way in. If you are quicker than she, you may succeed in catching her.—She is very quick in all her movements, especially at this time. If you fail to find her, they will be very apt to come off the next day; and you should renew the attempt until she is destroyed. The feeble colony will then remain with the old one. By this means you will keep your old stock well filled with Bees. Too much swarming is injurious. They become weak in numbers, and they are apt to fall a prey to the moth or robbers.

RULE FOURTH.

On Preventing Robberies.

APIARIANS have tried many experiments to prevent robberies, and have failed of finding a perfect remedy, until STODDARD'S *Patent Robber Box* was offered to the public. This, most certainly, is a great discovery, and worthy the attention of every Apiarian. I think few words are needed on this subject, as the first sight of this improvement, satisfies any man of its utility.—It only needs to be applied, and the work is done.

If you discover that your Bees are attacked by

robbers, close your Hive by means of the tongue in the *Hive Tube*, so that one Bee only can enter at a time, and then your Bees can guard the entrance. If the contention has just commenced, this will be sufficient. If it is of long standing, close up the entire entrance, observing well to give them sufficient air. Let your Hive remain closed till sunset, then open it, to admit your own Bees, and give any robbers which may be within an opportunity of escaping. Close the Hive again before sunrise; and if any Bees appear, give them a shower of cold water from a water pot or broom. They will be so offended with your treatment, as to leave very soon. Then give your Bees free ingress and egress, and they will again resort to their labor.

Bees are not likely to make war, and rob each other, except in the Spring and Fall. Sometimes extreme hot weather causes honey to drip, and then most of the Bees engage in the work, and carry it off, and leave an empty Hive for the owner.

In case you have a young swarm robbed, and the comb is clean from the moth, and light colored, close your Hive and set it away until swarming. Have a small colony in it, and they will soon cleanse the comb, and commence storing up honey. Here you will find a great saving, and the Bees are always fond of such a habitation. If the comb is old and dark colored, never put Bees into it.

I would recommend all Apiarists to adopt this rule: If you find a swarm of young Bees robbed, and honey remaining in the comb, secure it well from ants and spiders, and set in a dry room until November—then look for a weak swarm that is destitute of honey, and transfer them into this Hive, and you have a good colony. This I have practised for a few years with good success. In March, 1846, I examined my Bees, and found them destitute of honey: I transferred them into such a Hive of comb and honey—preserved them—and they swarmed twice during the season. Here you discover good resulting from experiment. I proceeded the same way with a swarm in January, 1848, and my

profits from the same swarm during the past season, were \$14. This operation may be performed with much more ease than to remove the honey from the Hive, and feed the Bees. In feeding bees, you are apt to loose your Bees by robbers, unless great *caution* is used.

Many ways of transferring Bees have been advised by different Authors. There appear to be objections against all the methods recommended, and it is esteemed a difficult operation. But this difficulty seems to be obviated by the *Self-Protecting Hive*, as you will see by another rule. An eastern gentleman has tried the experiment of administering Ether, which soon prostrates them and they are transferred to another Hive before they recover; perhaps this may be used with success, but it is doubtful.

RULE FIFTH.

On Removing Honey.

As soon as you discover that your drawers are full, and all the cells capped over, and most of the Bees left the drawers, (a few will remain to guard them,) insert a tin slide between the drawer and the chamber floor, then remove the drawers and insert empty ones in their place. Now remove the slide and let the Bees pass through the aperture, into the empty drawers.—They will discover that they have been robbed of a part of their Winter's store, and unless the working season is too far spent, they immediately set themselves to work to repair the loss. The labors of making comb and depositing honey, end, in this country about the last of August, or the first of September.

After you have removed the honey drawers in this manner, take them near the house and set them on the glass end that the Bees may return to the Hive.—From this place take your drawers to a dark room, with a small opening; set your drawer near the opening—rap a few times on the box, blow occasionally in the aperture, and the Bees will soon leave the drawer and honey for the owner. If their work is not com-

pleted, they are very slow to leave, and unless expelled by harsh means, they will stay until they have sucked every drop of honey from the comb.

Sometimes you will find brood comb in your drawers, and the Bees are not then easily expelled. Such drawers should be immediately returned to the Hive, in the same manner as they were taken from it, that the Bees may finish the work.

Apiarians should use much care in removing honey, to prevent the effluvia of running or dripping honey, which is always the greatest temptation to robbers.—Bees will engage in robbery at all seasons of the year, when it is sufficiently warm, if they can get access to running honey. Bees never manufacture honey, but extract it from flowers and such other substances as yield it, in its original state. This any one can prove by letting his Bees have access to a field of buckwheat. The effluvia arising from the honey is the same as that arising from a cluster of buckwheat blossoms. There will also be a material difference in the color; honey made from the flowers of buckwheat has a darkish color, from dandelions, a most beautiful yellow, from white clover and basswood, white. Bees extract but little honey from red clover; the cells are so deep, that the Bee cannot plunge his trunk, or proboscis, to the bottom, where the sweet liquid is deposited. Red clover yields abundance of honey, if the Bees could only obtain it. In this country, Bees extract honey from apple tree blossoms—white clover—soft maple—willow—dandelion—basswood—heart's ease—buckwheat, and many other scattering blossoms.

If there is much Buckwheat in reach of your Bees, you had better remove your honey, before your poorer honey can be extracted. Buckwheat honey is the best honey for wintering Bees.

Drawers should be cleansed, and put into your old stocks in the Spring as soon as blossoms open,—and then taken out as fast as they are filled. Feeble swarms should not be admitted to the drawers until swarming is over.

Drawers should be made as tight as possible in the

joints, to prevent dripping honey from leaking out, which makes them unfit for market. After the Bees have left the drawers, paste thick paper over the apertures, and store them in a chest made perfectly tight, to prevent Ants from destroying the honey. Pack your drawers with the apertures up, and in this way you can keep honey for years.

RULE SIXTH.

On Multiplying Colonies without Swarming.

IN stating this rule, I only speak in reference to Dr. REYNOLD'S *Hive* and STODDARD'S *Protector*. I have never seen any other non-swarmling Hives, that I consider of any importance.

If you use STODDARD'S *Hive*, and wish to increase your colonies without their swarming, prepare yourself with two or three tin slides; and when you discover that your Bees are about ready to come out, (and you can determine this by looking into the glasses, as they will appear crowded, and hang around the mouth of the Hive,) place an empty Hive where you wish them to stand through the season, and remove one of the inner Hives from the empty one, and place it near the one you intend to divide. Now insert two tin slides between the two inner Hives, and remove one of them, and insert the empty one in its place, observing well to keep the apertures closed in both Hives, to prevent the Bees escaping from either; then insert your inner Hive, containing Bees and bread comb, in the empty one. Close the tubes of both Hives with pieces of tin punched full of holes, and prepared for the purpose, so as to give a free circulation of air into the bottom of the Hive—passing up through the body of it and off through the ventilator, which is covered with fine wire gauze, to prevent the entrance of the Miller. Both Hives should be closed at the same time. Give both swarms pure cold water daily, for 3 or 4 days, after which, let them have their liberty.

REMARKS.

THIS operation, says Mr. WEEKS, is both practicable and easy, and is of prime importance to all cultivators who wish to avoid the necessity of hiving their Bees when they swarm. And yet, it will not prevent swarming, except in that part of the divided colony containing the Queen at the time of their separation. The other part are compelled to make another Queen; and as they generally make two or more, may swarm to avoid their conflict. The Hive containing the old Queen may swarm for want of room; but, at any rate, you save hiving, and prevent one swarm fleeing to the woods, by performing this operation. It should be performed in the evening, for two reasons: *First*, that all the workers may be at home in the Hive; and, *second*, that the Bees may become quiet through the cool of the night. Much care should be used in watering Bees while in a state of confinement. If a dish of water be set in the Hive, they will be very apt to get drowned. To prevent this, it is best to set a shallow dish into the Hive, and fit into it a thin piece of wood, full of small holes, so that the Bees can suck water from the dish. The board should be made very thin, and a little smaller than the dish, that it may settle as fast as the Bees drink the water. Place the water in the most convenient part of your Hive.

It is important to remove imperfect comb. Every brood that hatches leaves a cocoon, in the cells: so that the Bees soon become dwarfs. The welfare of a colony depends upon their being transferred once in three or four years. You should remove but one of the inner Hives the same year. When you wish to transfer an inner Hive, turn the tongue in the Hive tube within 1-4 of an inch of the side of the tube, and the Bees on their return will enter on the other side, and the one you wish to remove may, in this way, be nearly evacuated. After the Bees have mostly left, remove the inner Hive, and insert a clean one in its place. You can then remove the comb from the one taken out, and have it in readiness for another Hive. Observe

the same rules for removing the inner Hives as in dividing swarms.

RULE SEVENTH.

On Compelling Swarms to Make and Keep Extra Queens for Destitute Swarms.

Take a drawer containing brood comb and Bees and, place it in the chamber of an empty Hive, some distance from the Hive from whence you removed it, and stop the entrance to the Hive containing the drawer of brood comb and Bees. Give them water according to the directions in the preceding rule.

REMARKS.

The prosperity of every colony depends upon the condition of the Queen. An experienced Apiarian will soon discover it, if a swarm be destitute of a Queen; and if he can supply them with another, he can save them from certain destruction. If he cannot, he had better suffocate them at once, and remove the honey from the Hive, as this is his only chance of saving it. If you should chance to have an extra Queen in a drawer with a few Bees, remove the drawer to a tight room, where your windows are free from broken glass. Then let her out of the drawer, and she will immediately fly to the window. Take her by the wings and introduce her to the destitute Hive, at the upper aperture, and the Bees will soon discover that they have a leader, and resort to their labors. Much care should be used in taking the Queen, lest she should be injured.

In the year 1844, I hived a large swarm of Bees from an apple-tree; and as soon as they were in possession of the hive, I set them on the Bench as is my practice. Early the next morning, I discovered that the Bees were all on the outside of the Hive. On examining the cause, I found the Queen dead upon the ground. I tied a silk thread around her middle, and put her in the upper aperture of the Hive, and fastened

the string to prevent her falling. The Bees returned, and commenced building comb within 20 minutes.— The next morning, I found them clustered on the outside of the Hive, as before. I again found the Queen on the ground. The Bees finding her confined, had rescued her by gnawing off the string by which she was tied, and she rolled out of the Hive, and the Bees followed her. They had made 4 pieces of comb, but not one Bee was inside the Hive. I then tied a horse hair around her, and introduced her into the Hive again. The Bees followed, and worked finely for ten days, before I could supply them with a living Queen. I removed the dead Queen and introduced a living one; and the swarm filled the Hive, and made 24 lbs. of extra honey.

In the year 1846, I had occasion to try the same experiment; and I performed it with the same success, only I was enabled to furnish them a Queen much sooner than the first. Every Apiarian should pursue this course, if he has occasion, and has no living Queens on hand.

It is my opinion that I injured both of these unfortunate Queens in hiving them. I was not accustomed to using the Hiver in those days. If a man has but one swarm of Bees, he should use the Hiver; and he will never kill his Queens by Hiving.

RULE EIGHTH.

How you may Know a Swarm is Destitute of a Queen.

As soon as it is discovered that the Queen is gone, Bees should be supplied with one; for it is better to destroy a feeble swarm, to procure a Queen for a good swarm, than to suffer the good one to pine away and die, and feed the feeble one through the winter.

Bees when deprived of their Queen, cease labor—fly about the Hive—return to it—run up and down it in great haste—chase one another about, as though in pursuit of a friend—but do not venture far from the Hive. They seem to be actuated by no ambition—they carry no Pollen or Bee-bread on their legs—no dead bees are drawn out of the Hive—no deformed Bees are removed from the cells, and carried out—no flakes of

comb are seen round the Hive as is the case with healthy and prosperous colonies. They diminish in numbers, and lose all their industrious habits. If they stand near another swarm, they sometimes leave their own habitation and join their neighbors; and at other times they remain in, and about the Hive, till they dwindle away and all die, and leave the honey and comb for the robber, and the depredations of the moth.

In November 1844, one of my best swarms lost their Queen, and I was not able to supply them with a living one. I suffered them to remain in the Apiary, and watched all their movements. They diminished in numbers rapidly, and soon numbered not more than 100. No Bees left the Hive, and the living Bees at last gathered in a cluster, where they remained for 4 days; and finally died in this condition, leaving 60 pounds of good honey in the Hive. The death of this numerous family was caused by the destruction of only one of their number, the Queen.

RULE NINTH.

To Prevent the Depredations of the Moth.

MANY Apiarians have spent much time in contriving Hives, and placing their Bees in different situations, to prevent their destruction by their great enemy *the moth*. Much credit should be given to MR. WEEKS for his improvements, which have been very beneficial to those that have used them with care.

In case you are using the old box Hive, it is very necessary that you use much care in managing them, to prevent the intruder's progress. Examine your Hives, and fill all the cracks with a mixture of Lime, Gypsum, and Salt. This should be done in April.—Turn the Hive on the upper end, examine the comb, and if the cells have become black and contracted by constant hatching (as every brood leaves a web in the cell) you should remove them without disturbing the Bees, and they will soon repair the breach with new comb; and the young Bees will come forth a good size, which is very important. This operation should be

performed in a cool day. If there are Millers, and Webs in the Hive, remove them by means of a long hook made of wire, and return the Hive to the place where you intend it to remain. Place a half-inch block under each corner of the Hive, so as to give Bees an opportunity of passing out and in, on either side of the Hive. This space will prevent the miller from depositing her eggs between the Hive and bottom board, and if the miller worm gets possession of the Hive, they frequently come down in the evening out to the bottom board; and being somewhat clumsy, they scarcely ever return to the Hive. They will wander around, and finally fall off on the ground.

There are many reasons for Bees being troubled with millers; but the principal one is, that many use old tubs, and barrels for Hives: make Hives of shaky lumber, make very imperfect joints, thinking that anything that will hold Bees is sufficient. This is a great mistake; because the Bees will cleanse the Hive, glue up the cracks, and imperfect joints, and make it dark with a substance different from wax. This labor consumes much time which might be better spent, and would be, if they were provided with a Hive smooth in the inside, with perfect joints. Bees will frequently commence rearing their cells within 20 minutes after they are hived in a perfect hive; otherwise, it will take them several hours to cleanse the Hive, secure the joints, and prepare it to receive their comb, and honey.

Millers often attack swarms occupying a good Hive in consequence of too much swarming, so as to reduce their numbers; or of small swarms occupying large Hives. A colony should never be allowed to swarm out, and reduce their numbers so that they cannot guard themselves against intruders, and at the same time have a portion of their number out in pursuit of their winter's store. If a portion of the Hive is destitute of Bees, the miller may enter it and deposit her eggs in the unguarded comb, and leave it unknown to the Bees. The worm soon commences his depredations, and in defiance of the Bees, takes possession of the Hive and its contents.

When small swarms are put into large Hives the Bees soon become disheartened. They cannot keep up animal heat sufficient to make their wax work well, guard the Hive, and carry on their necessary labor for want of numbers; and they give up their habitation and property collected in store, to the moth, and neighboring Bees.

The miller more frequently encounters Bees in the old Box Hive than any other. Those who use them, and will take the pains to examine, will find, if the miller has not already gained possession, that they are in every crack in the Hive, and under the bottom board, ready to make an entrance as soon as an opportunity is presented. When they once gain possession of the Hive, the work of death commences; and the loss of the Apiarian is sufficient to have purchased the right to use the Vermont Hive, or almost any other one guarded against these assassins.

RULE TENTH.

On Feeding Small and Weak Swarms.

EVERY Apiarian should examine his Bees in October, and if any swarms have not sufficient quantity of honey to winter them, they should be supplied by removing the honey drawers from the chamber, and setting in a shallow dish of honey or good maple molasses. The Hive should be well secured from robbers; and if strained honey or molasses is fed, it should be filled with small pieces of comb to prevent the Bees from drowning, and they will soon secure the honey, and deposite it in their cells for their Winter's store.

If you have several swarms that need feeding, and are not able to supply them all, it will be best to suffocate part of them and feed their store to the living colonies. By this means, a part of your feeble swarms will be saved: otherwise, they will all die in the course of the winter. I have adopted the above rule with much benefit for a few years past. The most appropriate time for feeding is in October, before the weath-

er gets too cool. If the weather is cold they will not remove the honey to the cells. It will remain in the dish and become sour. It is then very unhealthy.—Much care should be used to prevent the honey from dripping down on to the bottom board, as in this case robbery will be apt to follow.

All Hives should be weighed, and marked, before using; then the amount of honey in the Hive can be nearly ascertained at any time. Each good swarm needs 30 pounds of honey to keep them through the feeding season. Some swarms need more than others. Much depends upon the winter and the manner of wintering them, as will be seen in Rule Eleventh.

Weigh your swarms in October, and deduct from the weight 8 or 10 pounds for the weight of the Bees; from 3 to 6 pounds for the weight of the comb and the weight of the Hive. This will give nearly the number of pounds of honey. All good Apiarians adopt this rule. Many swarms are lost by not making calculation in regard to their winter's stock. They live perhaps till March, or April, and having consumed their food perish, when a very few pounds of honey (perhaps 2 or 3) fed in the right time would have saved them. Had you destroyed your Bees in the fall, you might have saved the honey; had you fed them a little, you might have saved the Bees. But in this case, both are a dead loss.

Bees fed in the spring are very apt to get robbed.—Neighboring swarms become destitute, or nearly so, and commence a warfare upon weak swarms before the blossoms put forth.

RULE ELEVENTH.

On Wintering Bees.

As soon as frost has killed the blossoms, and no more honey and Pollen are to be obtained, you should remove all the drawers from the chambers of the Hives, and cover the apertures by placing a piece of board in the chambers, to prevent the breath of the Bees from entering the drawers, and chambers, as it

will cause a dampness, and they will become sour and mouldy.

REMARKS.

If the drawers are permitted to remain in the chambers after freezing weather commences, the breath of the colony will cause a dampness in drawers, a thick frost will collect in them, in a warm day it will melt and run down into the Hive, moisten the comb, and prove injurious to the swarm.

If the chambers are empty and the apertures remain unclosed, the dampness will swell the Hive open the joints, and give the miller access to the inner portions of the Hive, besides causing a sourness in the chamber, which makes it obnoxious to the Bees and congenial to ants and spiders.

The chambers and drawers should always be kept dry and clean. If the apertures are well covered, the breath will pass off through the ventilator, and prevent mould and sourness within the Hive, and the whole inner Hives will be dry and healthy.

There are three principal causes of death among Bees in the Winter, viz: *want of honey, want of air, and freezing.*

Bees sometimes die of hunger with honey in the Hive. But this occurs only in extremely cold weather. If the colony be small they will cluster together in a small compass in order to keep warm, and at the same time their breath and vapor collect in frost, in all parts of the Hive except the region they occupy. The honey becomes crusted over with frost, and the Bees are compelled to remain in the cluster to prevent freezing. If the weather does not moderate so as to thaw out the honey, they will remain in the cluster till they die of absolute starvation. This however, is seldom the case with old and large swarms.

Bees may be chilled till they are to all appearance dead, and be resuscitated by exposing them to the action of a warm atmosphere. This experiment may be repeated three times before life is extinct. I once had a very small swarm in a large box Hive. The Bees

had made a small cluster of comb in the top of the Hive. I wished to make it smaller to accommodate the swarm. In January I brought them out of the cellar, on a very cold day, and turned the Hive bottom side up in the cold air. In a few moments the Bees were to all appearance dead. I then carefully, to prevent injury to the comb, took the Hive to pieces and reduced its size one-half, put it together again with screws to prevent jarring it, and then removed them to a warm room, and in one hour I had a fine little swarm, full of life. In extreme cold weather Bees that are exposed to cold winds and storms, should be examined, and, if chilled and the Hive filled with frost, they should be removed to a warm room and resuscitated. It may be done with safety and success.

When I first commenced rearing and cultivating Bees, I practiced burying my weak swarms about the first of December, and could succeed in bringing them forth alive in the Spring in nine cases out of ten; but they generally appeared weak and inactive for some time, and finally I have found them either dead or robbed by stronger stocks as a general thing. In this case the comb is for the most part sour and mouldy, and renders the Bees unhealthy. From several years' experience I am fully persuaded that this practice should be entirely abandoned.

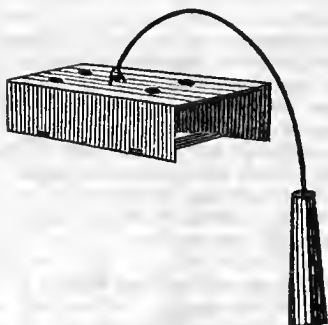
After this I carried my feeble swarms into my cellar in the fall, and let them remain there until warm days in March or April. I have also abandoned this method of wintering feeble swarms, and proceed in the following manner: I set my Hives on a bench one foot from a board fence or some building, and place the Hives 6 inches apart. I then put up some boards in front of the Hives, and cover the ventilators with perforated tin, so as to let them have air, and then take dry straw and press it in well back, in front, and between the Hives, and cover them over the top one foot deep with straw, and then put a good cover over them to keep out the sleet and rain. If you hear much buzzing in the Hives in warm days in March, take them out. This

method of wintering is preferable to any other now in use.

I find by experimenting that a swarm in a dry cellar will eat from 3 to 10 pounds more honey through the feeding season than the same sized swarm standing out doors well covered with straw. Bees standing in a warm cellar will feed every day more or less, as the occasion may require. But Bees exposed to a cooler atmosphere will eat when it is warm enough for them to move about the Hive with safety, and in cold weather they will cluster together and remain in a dormant state until a change of weather; but they will not freeze if well covered with dry straw, and the comb remain dry and healthy.

A swarm of Bees standing out doors, exposed to the storm and warm rays of the sun, will eat a number of pounds more of honey than one covered with dry straw. Bees standing in the sun will fly out every warm day through the Winter and empty themselves, and return to the Hive. They then feed bountifully until they become full again. After this they eat but little until another warm day. Then they leave the Hive again, as above stated. This is repeated through the feeding season. But Bees covered with straw are kept from the wind and the warm rays of the sun.— They do not struggle to leave the Hive when the sun shines upon them, because they do not feel the effects of it enough to give them any uneasiness. Consequently they do not empty themselves through the winter, as they never empty themselves in the Hive, unless the weather is so warm that they become restless, and are confined in the Hive. If the weather be very warm, and they insist upon it, it will be better to let them come out. They are sometimes lost by being kept confined when the weather is warm.

RULE TWELFTH.

On using the Hiver.

THIS instrument is but little known among Apianians, and yet such is its simplicity, cost, and convenience, that any man who has one swarm of Bees should have it and use it.

A Hiver should be made of three pieces of thin boards 18 inches long, the top, 8 inches wide, the sides 5 inches wide. The top should be $\frac{1}{2}$ an inch thick, the sides 1-4 of an inch thick, with two bars across the bottom to support the sides. There should be 6 or 8 half inch holes through the top, to give the Bees rapid ingress. The boards should be rough, to enable the Bees to adhere to the box to prevent falling. In the middle of the top board place an eye made of stout wire; and then take a long piece of large wire, make one end fast in the eye, and bend it so that it will come down over the side of the Hiver. Then prepare 3 or 4 handles of different lengths, and make holes in one end of each a trifle longer than your wire, say 4 inches deep. The wire can then be inserted in either handle, to accommodate the location of the swarm; and when they have entered the Hiver, you can remove them to the Hive, without conveying the handle.

Those who make use of the Hiver, can avoid climbing trees to bring down clusters of Bees, and are never under the necessity of cutting away choice fruit trees.

As soon as a swarm come forth, have your Hiver in readiness, and when you discover where they intend to light, place it over the little cluster that have gathered, and they will enter. As soon as a pint or quart are gathered, move it a few feet from where they commenced lighting, and set the lower end of the handle in the ground and place a crotch under the pole or wire, to keep your Hiver suspended in the air until all the Bees have collected in it. Have your Hive placed on a board, as in Rule II. Now take down the Hiver, and drop them on the board, and they will soon take possession of the Hive. In using the Hiver, you are in no danger of killing the queen or other Bees, as is frequently the case with the old method.

Apiarians having a large stock, should have two or three hivers, so that they may be prepared, in case a number of swarms should come out at the same time. They will be found very useful in doubling second and third swarms. I have a small swarm in my Hiver, and leave it suspended in the air for a short time. If another small swarm comes forth, I remove my Hiver containing the Bees among those coming forth, and they immediately go on to the Hiver. Now I have a fine large swarm worth \$4 or \$5; and if they were suffered to remain single, they were worth only \$1. I have sometimes let a small swarm remain in the Hiver suspended in the air from four to six hours, to receive the second swarm. If you do not succeed in getting the second swarm the same day, hive the Bees in your Hiver and double them as in Rule III.

RULE THIRTEENTH.

History of the Queen.

THERE are three classes of Bees in every swarm, and the Queen differs very much from the other two. She is the only female in a population of 15,000 to 30,000. She differs very much in size and shape from both the workers and drones. Her head resembles that of the workers. The eyes are covered with hair for protection. The black balls on each side of the head are made up of hundreds of stationary eyes placed in such a position that they can see in every direction. These eyes are set in rows, resembling honey comb; but they cannot be seen with the unaided vision.— The face between the eyes is covered with hair. The chest is nearly round, of a dark chestnut color, and covered with hair. She has 6 strong legs, with 2 hooks for a foot at the extremity of each, to enable her to adhere to the hive, and cluster. She has four wings, of which the two nearest the head are much the largest and longest. The rump is sloped very much like a sugar loaf, and is much longer in proportion than that of the worker. But little hair is ever seen on this part of the body, and it is covered with 6 belts or scales.— She has also 2 antennæ or feelers, which are made up

of 12 short joints, and furnish them with the means of communicating their ideas. She is armed with a large sting, differing from that of the workers by being curved. This she never uses except in conflict with a sister Queen.

Her duty principally consists in laying the eggs; and in her proceedings, she is attended by a guard of workers who pay her the greatest attention. Hence she is the *Mother* of the Hive, and it is one of the most curious points in the history of this insect to notice the immense influence which this female has over a population of many thousands. Did not the accounts which have been given depend upon authors of the most indisputable veracity, it would be almost impossible to believe them. REAUMUR, by dividing a Hive, clearly proved the careful attention and devoted affection with which she is regarded. He enclosed the two portions of the society in glass Hives, and ascertained that that portion which contained the Queen and only a small portion of the workers, quickly reared two pieces of comb. The other portion, by far the most numerous, did not construct a single cell; whence it is evident that the instinctive proceedings of the workers depend upon the love of progeny; and what is more remarkable still, they labor and toil, not for their own offspring, for they are totally incapacitated for becoming parents of the Hive.

The Queen passes 3 days in the egg state, and remains 5 days in the larva state. Their cells are now closed over by the workers, and they spend 24 hours in forming their cocoons. They remain nearly 3 days in their cocoons, and are then transformed to pupæ, in which state they remain 4 or 5 days. She appears in the perfect state on the 16th day after the eggs are deposited.

It appears incredible to those who have had no experience with Bees, that the larva intended for a worker or neuter Bee, can, by being removed to a royal cell and fed on transparent food, be made a Queen—a perfect female—different in size, shape, and movements from the worker. She is quick on foot, and

skulks when pursued. She seldom leaves the hive, except in company with the drone, in the season of copulation.

The Queen lives from three to five years. Mr. WEEKS informs us that he ascertained by experiments, that he had a Queen that came forth with the first swarm in the spring for 7 successive years.

RULE FOURTEENTH.

History of the Working Bee.



THE working Bee is much smaller than the Queen, and differs in shape from her, and also from the drone. The head is flat, and furnished with antennæ, having 12 articulations. They are covered with short hair next to the head, and resembling polished horns at the extremities. The eyes and face, resemble those of the Queen, being covered with short brown hair.

The jaws are very strong, and smooth at the tip.—The proboscis lies concealed under the throat, and is a most curious structure. If you hold a Bee by the wings, the mouth at first sight, appears to consist only of a transverse lip, and a pair of strong jaws. On further examination, a flattened instrument of a shining brown color is perceived, extending from the lip towards the throat. This is the tongue, and it can be projected forward, in a straight or curved line, at the pleasure of the Bee.

It consists of no less than five distinct parts. The

central piece is of a very delicate structure, ringed along the greater portion of its length, having a small circular orifice at the extremity. This is the *linguæ*, or true tongue, and from the case of the riuged portion, arises a pair of feelers, which are composed of four joints, the lower one being the longest. These organs when at rest, are defended by a pair of scaly instruments, called sheaths. When unemployed, the tongue is folded back upon the lower portion of these sheaths.

The chest is round and covered with hair, resembling that on a bat. Four wings, and six legs, are attached to this portion of the body. The posterior is covered with six belts or scales, covered with short hair, which is light colored on the edges, and grows darker toward the centre of the belts. The hind legs have five joints, and on the second long joint is the *Pollen concave Basket*. The bottom of this basket is smooth and dark colored, while the edge is covered with hair resembling a brush. This brush is used to remove the Farina from the wings and hair, and collects it in little balls in the concaves.

The Bee loses no time in collecting pollen. In extracting honey, it is brought in contact with the farinaceous part of the blossoms, and the furz or hair receives it from which it is gradually removed to the pollen basket, by the brush surrounding the concave. These yellow balls you may see on the legs of the Bees on any working day in May or June.

This little insect is furnished with a powerful weapon of defence, the sting, which is scarcely less complex in its structure than the tongue. If you take a Bee in your fingers, a dart is seen at once protruded from the extremity of the body. If this dart should be plunged into the finger, it will in all probability be left there, ere the Bee can disengage himself, and the pain is too well known to need description.

The sting is composed of five parts. *First*: a pair of elongated flattened organs, between which, when unemployed the extremity of the sting is lodged.—*Second*: the instrument, which consists of a canal hav-

ing a gutter along the upper edge, within which, two darts play backward or forward, at the option of the Bee. These darts are armed with fine teeth set backwards. The sting by means of the strong muscles at its base, is thrust forward and forms a support to the interior serrated darts, which are plunged into the wound, whence from their structure, it is impossible to withdraw them without considerable force.

The poison which is conveyed through the canal of the sting, is contained in a reservoir near the dilated base of the apparatus.

This Bee is 20 days passing from the egg state to a perfect worker.

RULE FIFTEENTH.

History of the Drone.



It has been supposed that the Drones were females, and deposited the eggs, and that the Queen was the only male in the Hive. But this has been discovered to be a mistake, and any apiarian may be convinced, by making a few observations in reference to this subject.

The drones are the males; and appear to be of little use only to increase the population of the Hive.— They sometimes engage in feeding young Bees while in the cells, but this is mostly done by workers.—

They are fed on Pollen, which is used for no other purpose.

The drone has a vast number of eyes, but little hair on the face, antennæ of 13 joints, and a bulky body, which is thickly covered with hair. Their posterior is covered with five scales only, while their wings are long, covering the posterior. They have six legs; but have no means of collecting Pollen. Their hind legs are large, free from hair, and their feet have each two hooks. They have no sting or means of defence; and remain quiet with the colony until about the last of August, when a general massacre takes place among them. The span of their existence does not exceed 4 or 5 months.

The drone passes 3 days in the egg state, 6½ in the larva, and makes his appearance at the end of 15 days; making 24 in all.

And by the use of Stoddard's Self-protecting hive these Drones may all be destroyed in one day, by putting a clapper on the end of the tube, and hang it by a small pin at each end low enough for the working Bees to go out and in. The Drone passing out, being larger will have to crowd the clapper out, and when once out he cannot return. In the evening you can go out and find them all around the mouth of the hive. Then you may destroy them as you please.

RULE SIXTEENTH.

Enemies of Bees.

I suppose that the moth or miller is the most dangerous enemy of Bees, and destroys more than all others combined. It is supposed that this insect migrated from England about the year 1800, in the vicinity of Boston; and has now spread over the country. One author ridicules the idea of its being transported so far; but any person acquainted with the habits of the moth, can at once discover that there are many ways in which it might have been transported.

This little insect within a few years has completely

destroyed hundreds and thousands of strong and healthy colonies in trees, hives, and palaces. No matter how strong and active the colony, if the moth once obtains possession, it is soon destroyed unless relieved by the owner. In a few weeks the contents of the Hive are destroyed, and a multitude of intruders are prepared to commence the work of destruction in other colonies. Every Apiarian should understand the nature and habits of the moth, and use every means to impede his march. The moth makes his appearance about the middle of April, and may be seen as late as the middle or last of October. They fly only in the night; and in the day time lurk in sly places about the Hive, and most generally hang with the head downwards. They are generally of a whitish gray color, with a pointed head of snuff color. They commence their march about dark, and are very active through the night. By examining a Hive where they are, in the evening with a candle light, the miller can be discovered watching every opportunity to get access to the unguarded comb, through some crack or open place in the Hive. They are not fond of coming in contact with the guards of the Hive. If they fall into their power they are soon dissected and removed from the Hive. You will find it quite amusing to catch a miller, remove one or both wings, and drop him among the Bees. They will soon tell you how they dispose of them when they can get at them.

In a few days after the eggs are deposited a caterpillar is formed, and closes itself in a cocoon. When ready to commence his work of devastation, he guards himself by spinning a strong web, and making safe roads in different directions. He seldom exposes his body, and his head is guarded by a shelly substance too hard to be penetrated by the sting of the Bee. As soon as the worm or caterpillar quits the pupæ state it becomes a winged moth. Again the work of propagation is carried on, and they soon become numerous and accomplish the destruction of the Bee in this manner.

In Box Hives mice are sometimes found in the winter season, and frequently destroy whole swarms. In

the spring of 1847, on examining my old Box Hives I found a mouse nest in one of the strongest of my swarms. The mice had eaten away the comb to the size of a quart bowl, and filled the vacancy mostly with feathers. I found a number of full grown mice in the nest. The weather had become quite warm, and the Bees had settled in the Hive so that the nest was covered with living Bees. The colony was so strong and the season so far advanced, that the mice would soon have been under the necessity of leaving the Hive. Hives should be made to accommodate Bees instead of mice, if much profit is expected from them.

Another great enemy to Bees is the *King-bird*; every Apiarian should pursue him with a rifle as a shepherd does a wolf. You will see this little bird sitting on the highest locations about the Apiary, watching the Bees as they return from the field of labor tugging along their burden; and with his utmost velocity he darts through the air and seizes his little victim. He pursues this slaughter until he has satisfied his appetite; and if you suffer him to remain unmolested, he will in a few days destroy many Bees and the treasure they bear. A certain writer informs us, that he once took from the craw of a king-bird 171 Bees; and no less than 54 of them recovered and returned to their Hive. This perhaps may be true, but to me it is doubtful. One thing is indisputable, give this bird an opportunity and he will make a meal of your Bees.

Ants are very troublesome, if they once get possession of the chambers of the Hive. They seldom trouble Hives that are well made, and the chambers kept dry through the winter season. But if the chambers are permitted to get sour and mouldy, ants and spiders will be very likely to be troublesome, especially the little black ant.

RULE SEVENTEENTH.

Antidotes for the Poison of Bees.

THE sting of the Bee is more poisonous at some

seasons of the year than at others. This poison is contained in a small saek or bag, at the base of the sting; which when magnified resembles a fish-bladder. The venom-saek is extracted with the sting, and the longer the sting is suffered to remain in the wound, the more poison is injected through the canal of the sting into it.

Salt wet with vinegar applied to the wound sometimes removes the poison. Spirits of Turpentine, Hartshorn, Alcohol, and all alkalies are antidotes. All such applications must be made externally and immediately after the incision is made, or they will afford but little relief.

RULE EIGHTEENTH.

The Anger of Bees.

BEES are easily provoked, and when irritated, will vent their anger on man or beast as the case may be. If Bees are suffered to stand where they are annoyed by cattle, they are more easily irritated. Bees are not displeased with frequent calls from their owner, if he treats them with respect; but if they are ill treated they will retaliate. Bees will soon be accustomed to their owner, and he can manage them without danger of being stung, if he uses gentle means; but he cannot rule them with a rod of iron.

I am fully persuaded that Bees can be domesticated from this fact: Before I commenced cultivating Bees it was unsafe for me to go into an Apiary or even within a yard where Bees were kept. In nine cases out of ten, they would pitch at me, and perhaps drive me from the yard. When I first commenced keeping Bees I was obliged to use much caution or a blow in the face would be the result. By being among them several times a day, frequently removing the bottom board, and looking among them very gently, I soon found little or no danger in managing them. Now I can go among them and manage them with entire safety; and yet, if I go among my neighbors' Bees, I am very apt to get stung or driven from the field.

It is a well known fact, that the Bee has a greater

antipathy to some persons than to others. They will not permit some persons to approach them without attempting to show resentment, and at the same time they will permit others to approach and even handle them, without making any effort to sting them.

There must be a cause for this partiality, and without doubt it is owing to the exhalations, which have a different scent, in different persons.

RULE NINETEENTH.

Method of making swarms from extra Bees.

THE experiment denoted by the above caption, I have frequently tried with much profit and success.—Some may not approve of it, but I give it for the benefit of those who may see fit to put it in practice.

It is frequently the case that during the swarming season, some quarts of Bees will hang in a cluster on the outside of the Box hive, and remain in that condition for weeks, and sometimes for months, until cold weather drives them into the Hive, providing there is sufficient room, and the cause of their not swarming is not known. Now if any plan can be contrived to engage these Bees in labor, and prevent their remaining idle so long, it is worthy of attention. In the year 1842, I had a swarm in this condition, and after they had remained so for the most of the swarming season, I tried the experiment. I prepared a clean Hive to receive a new swarm, and after looking some time, I found an extra Queen among some of my second swarms. I immediately carried her to the new Hive, being careful that she did not make her escape before I could introduce the Bees. I then brushed them from the old box Hive into a box, and carried them to the Hive and poured them in. They soon gathered in a cluster at the top of the Hive. In a few moments I examined them, and found the colony too small. I gathered a few more from another cluster, on another Hive, and put them with the first, and in a few moments they mingled together. They commenced rear-

ing comb within two hours—filled the Hive well with honey—and were one of my best swarms.

The following year I had two swarms come forth at the same time, and they both gathered on a Hive that was about ready to send forth a colony; fearing they would flee to the woods, (as they often do in such cases,) I immediately prepared a Hive, and went in search of an extra Queen. I then removed about 16 quarts of the Bees that hung together on the outside of the Hive, into the one I had prepared for the new swarm, and put the Queen among them. They soon took possession of their habitation, and commenced work the same afternoon. The Bees that were not taken from the Hive, came off soon after and went immediately to the woods. Here I saved one good swarm by making one as described, whereas they would most likely all have gone, had not a swarm been made in this manner.

I have pursued this method for several years with good success, and if I have an old swarm rather dilatory about swarming, and have hung in a large cluster for some time, I look for an extra Queen, and as soon as I find one, I remove the cluster to an empty Hive and put in the Queen, and if I find the colony too small, I gather from other Hives where they hang in clusters, until my colony is large enough. In this way I get their labors—otherwise they would have been for a long time in the cluster and remained idle.

I think it is of the greatest importance to Apiarians, to manage in a way to get all the labor they can from their Bees. They are industrious, and will labor for your benefit if you do all on your part. Every man should ornament his yard with a few of STODDARD'S *Self-Protecting Hives*, well filled with Bees—well managed—and they will afford a luxury for your table at little expense.

RULE TWENTIETH.

Profits of Cultivating Bees.

AFTER several years experience, I am of the opinion

that greater profits can be realized from the same amount of capital, than can be in any other property, if well managed.

In the first place, tradition must be done away. The improvements of the day must be observed, and applied. The Hives our Fathers used must not be held sacred because they used them. Many Bee owners will not use any improved Hive, but cling to the old miller dens, (box Hives,) suffer their Bees to be destroyed, and realize little or no profit.

I have used the box Hive, and various improved Hives, for the past ten years, and I will show you the difference between the box Hive, and the best patent Hives.

In the year 1842, I selected a good swarm from my stock, in order to ascertain the real profit of a swarm well managed. The first one came off the first of June. I hived them in a Vermont Hive, and sold the extra honey from the young swarm, for \$10 50. They had plenty of honey to winter them well, and I valued them in December, at \$5. The second swarm came off in fifteen days, and made plenty of honey to winter a large swarm. This was a good swarm worth in December, \$5. The old stock made 48 lbs of extra honey, worth \$6, amounting in all to \$26 50 real profit.

Here you discover the real gain from one swarm in a good hive; and this is not as great profit as has been realized by some Apianians. Mr. NUTT, of England, gives an account of receiving 296 lbs of honey from one swarm in a year. This amounted at 1 shilling a pound, to just \$37.

The income this season, from my best swarms, in my best constructed hives, has been from \$10 to \$20. From my best box Hives, \$5 to \$10, all the profits being in swarms that came forth.

Swarms in box Hives require more than four times as much care to prevent their destruction by robbers and millers, as STODDARD'S *Self-Protecting Hive*.

Some object that patent Hives cost so much, that one cannot afford them. Let us look at this moment.—

A box Hive costs 50 cts, and you reap but \$5 profit.— A protecting Hive costs \$1 50, and the profits \$10. A good hive, well painted and taken care of, is good for fifty years. Make your own calculations, and see which costs the most. I do not ask you to take my word for it—try it for yourself.

I consider it to be very important to Apiarians to avail themselves of the best constructed Hives that can be procured. If it is so constructed that all the Bees can be engaged in rearing comb, and gathering honey from the field and forest, the profit must be much more, than when the Bees are compelled to set a great proportion as guards, to keep away intruders, as is the case with the old box Hive.

RULE TWENTY-FIRST.

A good Apiarian.

A Good Apiarian will make his Hives of good materials, paint them well, place them in his Apiary before swarming commences. He will procure the best constructed Hive, and have his Hivers ready with handles of different lengths. He will salt his Bees in the Spring, by placing a lump near the entrances of the Hives. He will gather his Bees in a Hiver, instead of letting them light on the tops of his trees. He will have his Hive clean and cool, when he introduces his Bees, and remove them at once to the place where he intends them to stand, to prevent their being lost. He will sweep the Spiders away from all his Hives, to prevent his Bees being caught in their webs. He will secure them from the rays of the sun, and from storms. He will remove his honey drawers as soon as they are full, and insert empty ones in their place. He will weigh his swarms in October, and feed those that are feeble, and cover them with straw the 1st of December. He will examine those that stand exposed to winds and snow, in severe cold weather, and if chilled, restore them to life and animation in a warm room, and return them to their place. He will make his honey drawers

so that they will not leak—all of a size—so that they will fit every Hive. He will go among his Bees frequently, as a good farmer does among his stock, to see that everything is in order.

RULE TWENTY-SECOND.

A poor Apiarian.

A POOR Apiarian makes his Hives of rough boards, with open joints, to give the miller a good chance to enter and destroy his Bees. He makes his Hives after his Bees come forth and light—suffers them to cluster in the top of his fruit trees—never uses a Hiver—shakes them on a table—and kills a great many in Hiving them. He lets them remain in the sun until they have formed lines to their new habitation—consequently, many of the Bees will be lost when the Hive is removed to its destination. They will return to the place where they were tived, if left long enough to form lines, which takes place soon after hiving. He suffers them to stand exposed to the sun and storms.—He never examines them to prevent the depredations of the moth. He suffers robbers to encounter and defeat them, leaving only a Hive of dry comb, for the moth and their owner.

He never feeds feeble swarms, but suffers them to eat 10 or 15 pounds of honey, and starve to death in March, or April. He lets the spiders build their webs about his Hives to catch his most industrious Bees.—He never gives them salt, and allows hogs and cattle to disturb them and upset the Hives. He suffocates them with brimstone to get what little they have accomplished through the working season. When they swarm, he rattles bells, pans, tongs, and blows horns, to drive them to the woods, to seek a better home.







